



TOP \_\_\_\_\_  
**10**  
FACTS

About Agricultural  
Biotechnology and  
Biosafety

# FACT 01



**2019 was the 22nd year of successful commercialization of biotech crops in Africa (24th globally)**

1

Africa doubled the number of countries planting biotech crops from three in 2018 to six in 2019 and a seventh (Kenya) granting cultivation approval.

2

The six countries were: Eswatini, Ethiopia, Malawi, Nigeria, Sudan and South Africa.

3

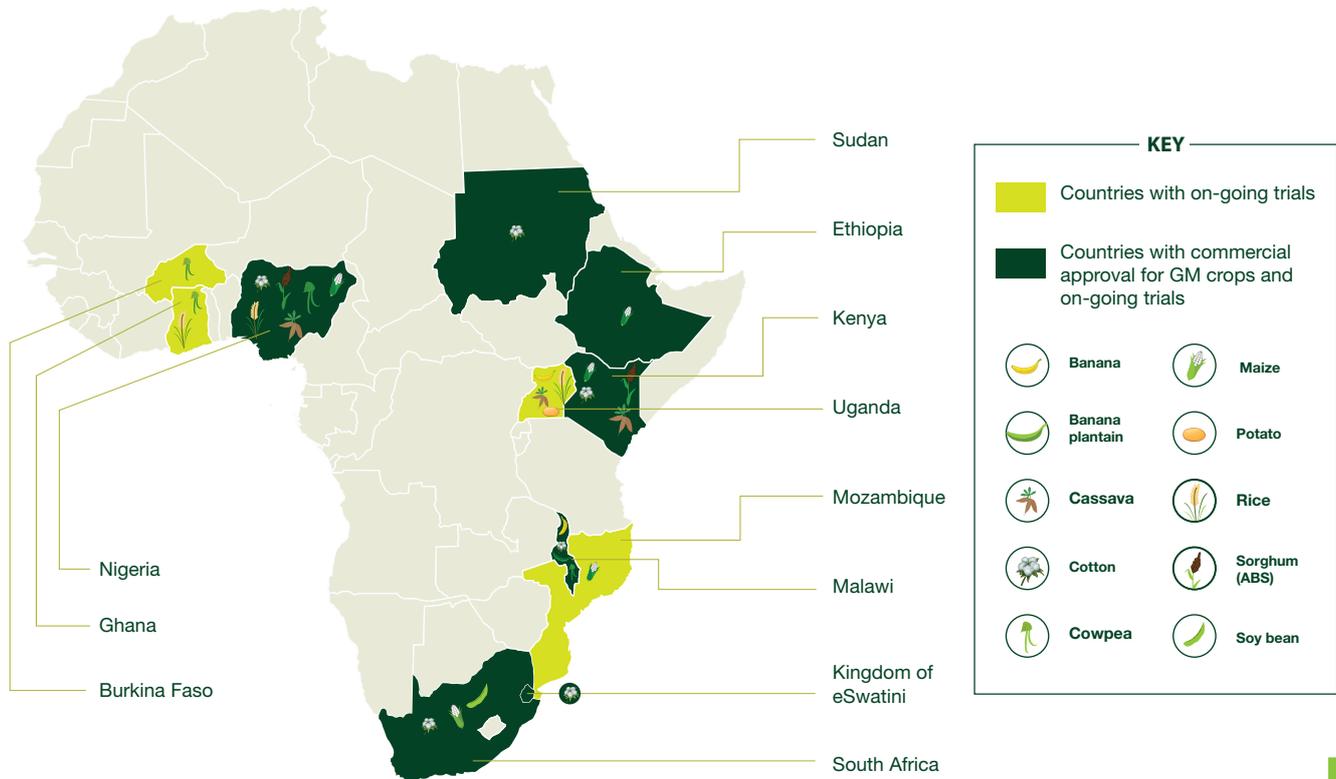
Three biotech crops – maize, soybean and cotton, were grown on 2.93 million hectares.

# Africa Moving Forward: Biotech/GM Status by 2019

**10** CROPS

**11** COUNTRIES

**16** TRAITS



# FACT 02



## The commercialized crop traits in Africa were insect resistance (Bt), herbicide tolerance (HT) and (Bt/HT) multistacks

1

### **Insect resistance:**

Bt cotton was the front runner across Africa, with Eswatini, Ethiopia, Malawi, Nigeria and Sudan having planted it on close to 244,000 hectares. South Africa planted Bt maize on approximately 175,000 hectares.

2

### **Herbicide tolerance:**

A total of approximately 694,000 hectares of HT soybean was planted in South Africa, similar to the year 2018. In addition, HT cotton was grown on 2,183 hectares, as refugia.

3

### **Stacked Bt/HT:**

Out of the 1.95 million hectares of biotech maize planted in South Africa, 58% was stacked (approx. 1.13 million). Bt/HT cotton was grown on approximately 41,471 hectares.



# African Scientists are Focusing on Crops and Traits of High Relevance to Challenges Facing the Region - 2019 Status

## Kenya

-  **Maize** ..... Drought tolerance and insect resistance stacked events (TELA)
-  **Maize** ..... Insect resistance (TELA)
-  **Cotton** ..... Insect resistance
-  **Cassava** ..... Cassava Brown Streak Disease (CBSD) resistance
-  **Sorghum (ABS)** ..... Biofortification

## Nigeria

-  **Cowpea** ..... Insect resistance to maruca pest
-  **Sorghum (ABS)** ..... Biofortification
-  **Rice** ..... Nitrogen Use Efficiency (NUE)
-  **Rice** ..... Nitrogen Use, Water Efficiency and Salt Tolerance (NUWEST)
-  **Maize** ..... Drought tolerance and insect resistance stacked events (TELA)
-  **Cotton** ..... Insect resistance
-  **Cassava** ..... Delayed postharvest starch deterioration
-  **Cassava** ..... Biofortification

## Uganda

-  **Banana** ..... Banana bacterial -Xanthomonas Wilt (BXW) resistance  
Banana parasitic nematode resistance  
Biofortification
-  **Cassava** ..... Cassava Brown Streak Disease (CBSD) resistance
-  **Rice** ..... Nitrogen Use Efficiency (NUE)
-  **Rice** ..... Nitrogen Use, Water Efficiency and Salt Tolerance stacked events (NUWEST)
-  **Potato** ..... Late blight disease resistance

## Malawi

-  **Cotton** ..... Insect resistance
-  **Cowpea** ..... Insect resistance
-  **Banana** ..... Bunchytop virus resistance
-  **Banana plantain** ..... Bunchytop virus resistance

## Mozambique

-  **Maize** ..... Drought tolerance and insect resistance stacked events (TELA)

## Kingdom of eSwatini

-  **Cotton** ..... Insect resistance

## South Africa

-  **Cotton** ..... Insect resistance/ herbicide tolerance multi-stacked events
-  **Soy bean** ..... Insect resistance/ herbicide tolerance multi-stacked events
-  **Maize** ..... Insect resistance multi stacks event (TELA)

## Ethiopia

-  **Maize** ..... Drought tolerance and insect resistance stacked events (TELA)

## Sudan

-  **Cotton** ..... Insect resistance

## Ghana

-  **Rice** ..... Nitrogen Use Efficiency (NUE)
-  **Rice** ..... Nitrogen Use, Water Efficiency and Salt Tolerance stacked events (NUWEST)
-  **Cowpea** ..... Insect resistance to maruca pest

## Burkina Faso

-  **Cowpea** ..... Insect resistance to maruca pest

# FACT 03



## Africa contributed one improved biotech crop to the global food basket

1

Nigeria made a landmark approval of insect protected (Bt) cowpea. The crop is resistant to pod borers that can cause up to 80 percent yield loss.

2

Bt cowpea was Nigeria's first biotech food crop to get regulatory approval by the country's Biosafety Management Agency (NBMA).

3

This development placed Nigeria as the first country ever to commercialize genetically improved cowpea globally.



# FACT 04



## South Africa was among the top ten biotech crops mega countries with 2.69 million hectares planted to biotech improved crops

1

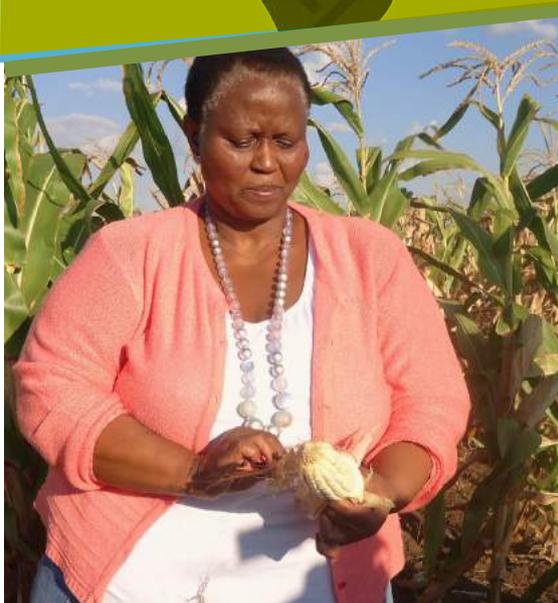
The year 2019 marked South Africa's 22 years of commercial cultivation of three principal biotech crops: cotton, maize, and soybeans.

2

The estimated acreage per biotech crop comprised of maize (~1.95 million hectares), soybean (~694,000 hectares) and cotton (~44,000). Average biotech crop adoption stood at 85% for maize, 95% soybean and cotton at 100%.

3

The country is nearing a plateau with average plant biotechnology adoption of 93% of the three principal crops. This is a source of inspiration for other African countries and lessons learnt continue to inform the growth of the sector.



# FACT 05



## 2019 marked the seventh year of farmers planting biotech crops in Sudan

1

A total of 236,000 hectares of Bt cotton was planted, a slight drop of about 3% from the 243,000 hectares planted in 2018.

2

The drop in acreage was attributed to breakdown of some irrigation systems and extreme weather during the cropping season where there was severe flooding followed by a long dry spell.

3

The estimated number of farmers remained at 150,000 with average farm sizes of 2.1 hectares, and a 98% adoption rate of biotech cotton.



# FACT 06



## Africa sustained steady progress in biotech crops research and regulation

1

Kenya approved commercial cultivation of Bt cotton in December 2019 through a one-off cabinet decision, following a Presidential directive to fast-track delivery of Bt cotton to farmers.

2

Researchers from Mozambique Institute of Agricultural Research sought approval for insect resistant and drought tolerant maize under TELA. An application submitted to the National Biosafety Authority was reviewed and awaits a biosafety decision.

3

Cassava researchers from the Kenya Agricultural & Livestock Research Organization submitted an application seeking approval for open field cultivation of Cassava Brown Streak Disease (CBSD) resistant Cassava Line 4046. In addition, the International Institute of Tropical Agriculture (IITA) submitted an application to Nigeria's National Biosafety Management Agency for confined field trial of genetically engineered cassava with increased starch yield.



# FACT 07



## Africa farmers continue to reap significant agronomic, environmental and socio-economic gains from biotech crops

1

Estimated economic gains from biotech crops for South Africa for the period 1998 to 2018 was approximately US\$2 billion and US\$237 million for 2018 alone (Graham Brookes, 2020).

2

Sudan reports positive change in the entire cotton sub-sector value chain, starting from production, through reduced number of chemical sprays and higher yields. Farmers have reported increased income as well as improved living and health standards.

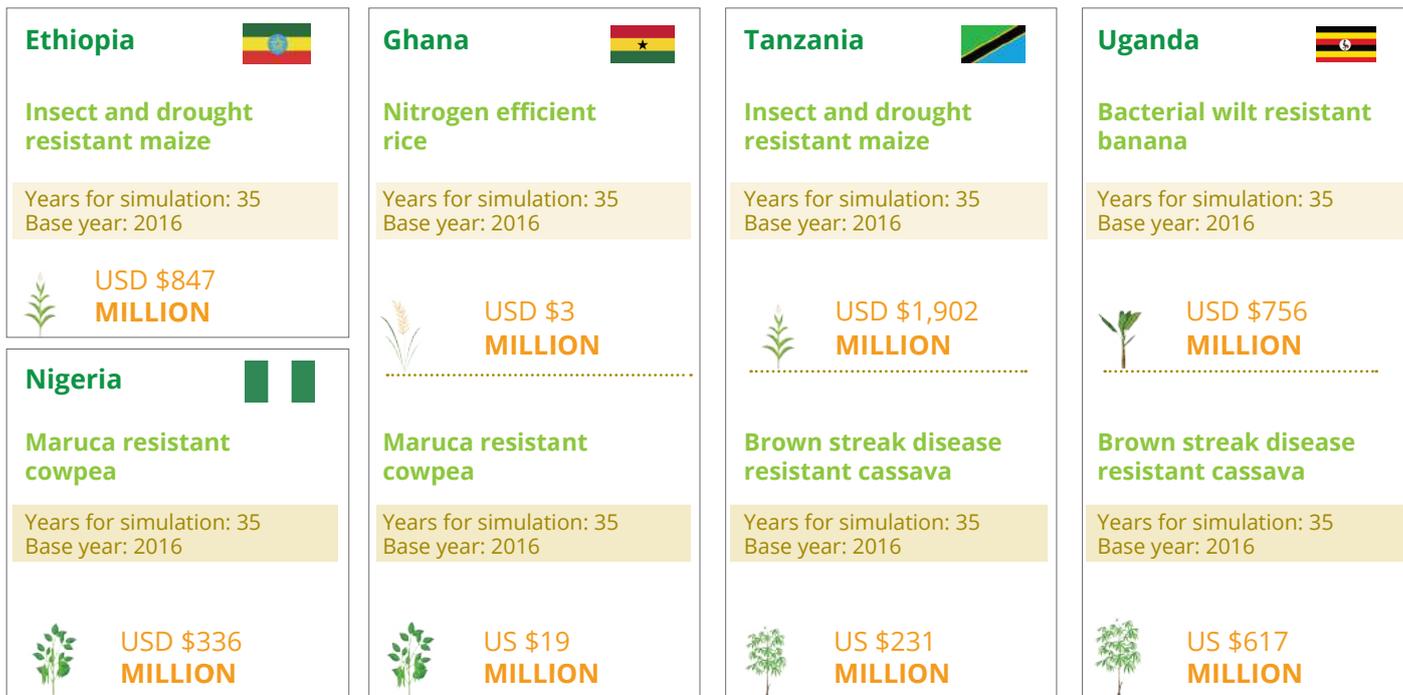
3

In Ewastini, farmers reported a reduction of chemical sprays from 8 to just 3 per cropping season - a significant benefit to the environment.



## African Economies Stand to Benefit from Biotech Crops

Predictive economic studies conducted by African economists in collaboration with researchers from the International Food Policy Research Institute, in five countries across the region, show the total potential benefits of adopting biotech crops as:



# FACT 08



## Africa made significant milestones in biosafety policy and infrastructural development

1

The Republic of Niger passed the Biosafety Law in October 2019. The law will provide safety measures in research and development with respect to modern biotechnology and for transboundary movement of living modified organisms (LMOs) as well as products thereof.

2

Ghana's government considered new regulations that would facilitate the regulation of genetically modified (GM) food in the country. The Biosafety Management of Biotechnology Regulations 2019, a legislative instrument, was passed by parliament.

3

Burkina Faso moved a major step forward in biosafety development following the inauguration of the National Biosafety Laboratory on September 2019 in Ouagadougou.



*From left to right are Hon. Minister Maurice Dieudonne BONANET, Hon. Minister Alkassoum MAÏGA, Prof. Chantal Zoungrana and Hon. Larlé Naba Tigré during opening of the lab in Burkina Faso.*

# FACT 09



## Grassroots communities intensified pressure on Africa governments to enable access to biotech crops

### Wakiso farmers want NARO to fast track the release of disease free cassava seed

By Prossy Nandudu Added 5th September 2020 12:57 PM

Nakanwagi Aida, another farmer wondered whether NARO cannot use other laws to release the varieties to farmers as they wait for the pending the law.



Barisoy Jenimah and Kyeune Richard, Wakiso farmers witness harvesting of GMO cassava under trials in Namulonge. (Photo by Prossy Nandudu)

1

Kenyan small-scale farmers, through the Society for Biotech Farmers of Kenya (SOBIFAK) called on the government to remove hurdles that deny them access to Bt maize and Bt cotton. Their appeal paid off following the approval of Bt cotton for open cultivation.

2

Farmers in northern Ghana called on their government to speed up commercialization of biotech crops in the country. Representatives of farmer groups under the coalition of Concerned Farmers of the Northern Region expressed their concern about the continuous decline of cotton and cowpea production.

3

Almost a year since the passing of the Genetic Engineering Regulatory Act (GERA), Ugandan farmers still waiting on commercialization of biotech crops intensified their rallying call to government agencies for access to biotech crops.

# FACT 10



## Partnerships and diversification of technology providers in Africa are bearing fruit

1

South-South collaboration has resulted in diversification of technology providers where a number of Asian companies are partnering with several African research organizations to share technology and expertise.

2

The diversity of public-private-partnerships is boosting confidence in biosafety decision-making and adoption of biotechnology in Africa.

3

Farmer-to-farmer experiential learning among the Asian and African farmers has contributed towards fast adoption of biotech cotton in Africa.



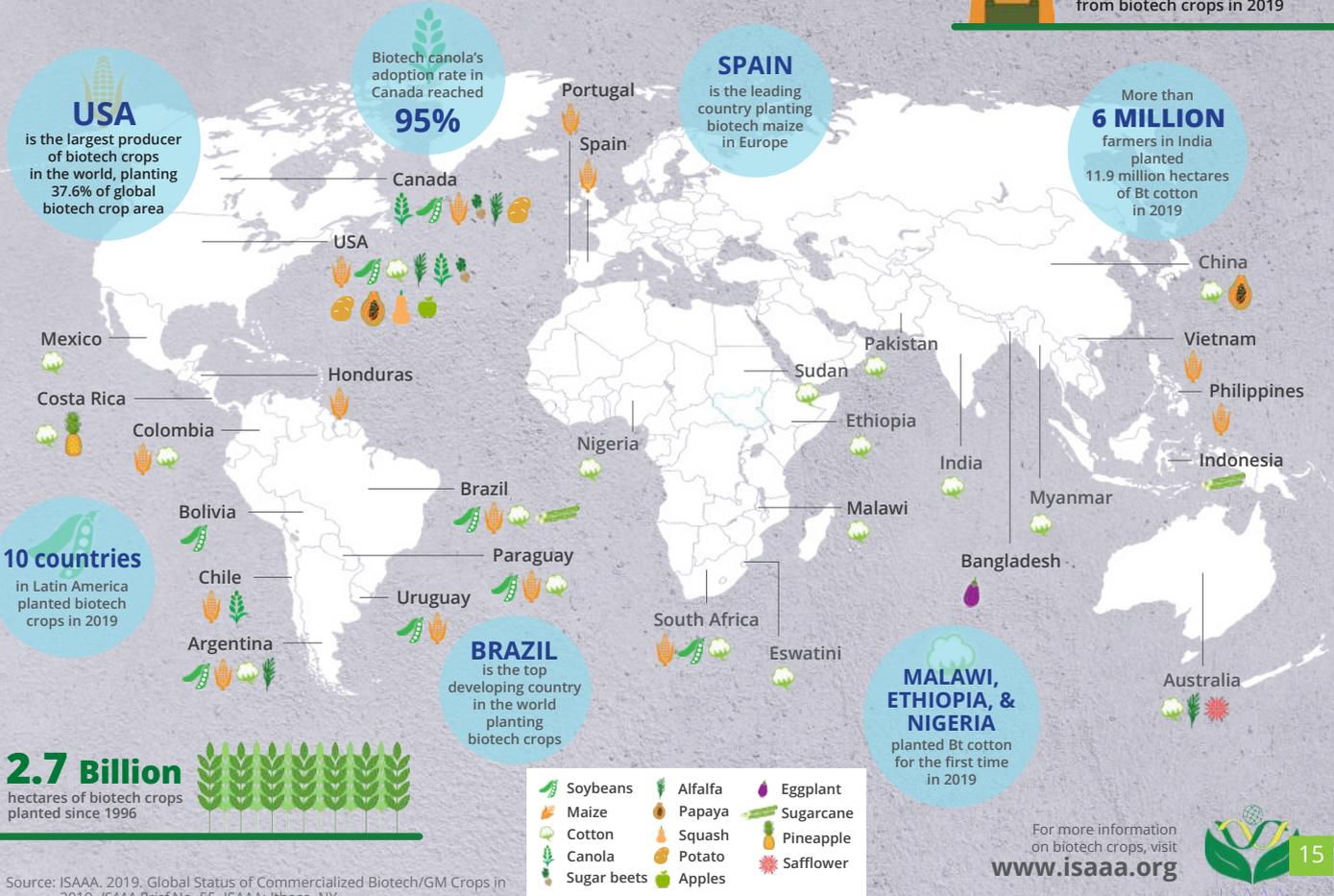
# Do you know where biotech crops are grown?

More than 30 countries have planted biotech crops since 1996. See where they were grown in 2019.



## 17 MILLION

small, resource-poor farmers and their families totaling >65 million people benefited from biotech crops in 2019



Source: ISAAA. 2019. Global Status of Commercialized Biotech/GM Crops in 2019. ISAAA Brief No. 55. ISAAA: Ithaca, NY.

For more information on biotech crops, visit [www.isaaa.org](http://www.isaaa.org)





ISAAA AfriCenter  
ILRI Campus, Old Naivasha Road,  
P.O.Box 70-00605,  
Uthiru, Nairobi, Kenya.  
Tel: +254 20 4223618,  
Twitter: @afri\_isaaa  
Email: [africenter@isaaa.org](mailto:africenter@isaaa.org)  
Website: [www.africenter.isaaa.org](http://www.africenter.isaaa.org)



AATF  
ILRI Campus, Old Naivasha Road,  
P.O.Box 30709-00100,  
Nairobi, Kenya.  
Tel: +254 20 422 3700,  
Twitter: @aatfafrica  
Email: [ofab@aatf-africa.org](mailto:ofab@aatf-africa.org)  
Website: [www.aatf-africa.org](http://www.aatf-africa.org)

**Citation:** Top Ten Facts about Agricultural Biotechnology and Biosafety in Africa by 2019. (2020). Nairobi, Kenya: ISAAA AfriCenter

